

scintillator of this invention 18 is shown as a disc shaped member consisting of a non-oxidizing retaining ring 20 bonded on its internal surfaces 21 to an optical transparent substrate 24 of quartz, glass, polymer, or any optically clear material. An indium tin oxide (ITO) layer 26 of about 100 to 1000 angstrom thickness is bonded to the inner end 28 of the substrate. The ITO layer 26 is bonded to the inner surface of retaining ring 20 by an electrically conductive adhesive, epoxy, or solder 32, particularly in the area between the radially outer edge portion 34 and the inner side 30 of radially inwardly extending lip 22 on ring 20. A layer of scintillator material, preferably about 10 to 400 μ m in thickness, 36 is bonded to the surface 38 of the ITO layer and lip 22 and adhesive material 32 so that electrons impinging on the outer surface 40 thereof produce photons which pass through the ITO layer 26 and are guided by the substrate 24 and the lightpipe, to which the substrate is connected at its outer surface 42 or is an integral part thereof, to the photomultiplier (PMT), such as shown in Figs.1 and 2.--

Version with markings to show changes made.

As described above, Figs. 1 and 2 show schematically a typical prior art electron microscope of the type in which the invention can be used. The scintillator of this invention 18 is shown as a disc shaped member consisting of a non-oxidizing retaining ring 20 bonded on its internal surfaces 21 to an optical transparent substrate 24 of quartz, glass, polymer, or any optically clear material. An indium tin oxide (ITO) layer 26 of about 100 to 1000 angstrom thickness is bonded to the inner end 28 of the substrate. The ITO layer 26 is bonded to the inner surface of retaining ring 20 by an electrically conductive adhesive, epoxy, or solder 32, particularly in the area between the radially outer edge portion 34 and the inner side 30 of radially inwardly extending lip 22 on ring 20. A layer of scintillator material, preferably about 10 to 400 μ m in thickness, 36 is bonded to the surface 38 of the ITO layer and lip 22 and adhesive material 32 so that electrons impinging on the outer surface 40 thereof produce photons which pass through the ITO layer 26 and are guided by the substrate 24 and the

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4. The method of making a scintillator for an electron microscope comprising:

providing a disc shaped substrate of optically clear material having a first surface, a second oppositely facing surface, and an outer edge side wall;

applying a coating of indium tin oxide on said first surface of said substrate by sputtering;

providing [a] an electrical conducting retaining ring having a non-oxidizing surface, an internal size to fit in close contacting engagement with said side wall of said substrate, and a radially inwardly extending lip on one end;

applying electrical conducting adhesive means on at least the radially outer edge portion of the exposed surface of said indium tin oxide coating;

fitting said retaining ring onto said substrate in close contacting engagement with said side wall of said substrate and said lip overlying in close contacting engagement with said radially outer edge